Briefly analyzed examples call attention to physical and biological aspects of obscure and even problematical breaks in selected areas at or near boundaries of (1) the Permian and Triassic, (2) the Cretaceous and Paleocene, (3) the Silurian and Devonian, (4) the Devonian and Mississippian, and (5) the Pennsylvanian and Permian; and of minor stratigraphic divisions on (6) the flanks of the Nashville dome and (7) on the northern Mid-Continent stable platform. It is concluded that the obscurity of hiatuses is unrelated to their importance and that pulsatory, more or less localized, differential crustal subsidence furnishes the main control for sedimentary accumulations and the "breaks" within them.

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EAGLE PLAIN BASIN OF YUKON TERRITORY

The Eagle Plain basin is an intermontane structural depression, 120 by 60 miles, which straddles the Arctic Circle in the Yukon Territory, Canada. Geologic history was influenced by a mildly positive central core which was flanked by local depositional basins through most of post-Cambrian time. Paleozoic basins include the Richardson basin, the area of the present southern Richardson Mountains, a Late Devonian basin west of the Richardson Mountains in the northeast, and a prominent Permo-Pennsylvanian area of depression in the southeast. Depositional topographic profiles identified in Permo-Pennsylvanian seismic record sections suggest shoreline conditions north of the present erosional limit of the Pennsylvanian, indicating increasingly positive behavior of the central core during the late Paleozoic.

Regional uplift during the Triassic hiatus culminated in the development and erosion of the Eagle arch, which plunged gently northeast through the stable core. Late Jurassic and Early Cretaceous sands onlapped the area from the north. Not until Albian time, when a depositional trough along the present Dave Lord ridge linked the northern Richardson Mountains to the Kandik basin of the Alaska border region, did Mesozoic seas inundate the Eagle arch and the southern Eagle Plain. Laramide deformation of the mountain belts and the concurrent development of simple folds in the enclosed Eagle Plain basin were the final acts in a Mesozoic diastrophic cycle, during which pressure from the Yukon stable block in the northwest at first fostered and later crushed the Kandik-Richardson trough against the stable Eagle Plain.

Exploratory drilling has been directed mainly toward the testing of the folded subcrop of Permo-Pennsylvanian sandstone, and the lower Paleozoic carbonate reservoirs on major anticlines. Fourteen wells have been drilled, with the resultant discovery of one oil and two gas accumulations, all in Permo-Pennsylvanian rocks.

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LATE DEVONIAN CONODONTS FROM ALBERTA SUBSURFACE

Cores from four wells in mid-southern Alberta have yielded diverse and abundant conodont faunas. Large numbers of specimens were recovered from Upper Devonian strata assigned to the Wabamun Group (Famennian) and the stratigraphically lower Winterburn Group, Woodbend Group, and Beaverhill Lake Formation (Frasnian). Included in the Wabamun Group are the Big Valley Limestone and the lower evaporitic and dolomitic Stettler Formation. Named units of the Winterburn Group include, in descending order, the Graminia, Calmar, and Nisku. The upper two units of the Winterburn Group did not yield conodonts; the Nisku contained a sparse fauna. In descending order, the Woodbend Group includes shale of the Ireton, limestone of the Duvernay, and limestone and dolomite of the Cooking Lake units. These last units are in juxtaposition with the reefs of the Leduc Formation. All Woodbend strata contain well-preserved and diagnostic conodont faunas which are markedly different from the forms of the Famennian Wabamun rocks above. Below the Woodbend Group lies the Beaverhill Lake Formation, which is predominantly limestone and contains a moderately abundant conodont fauna.

Comparison of faunas recognized in the Alberta subsurface with other described faunas reveals correspondence with forms known in North America and western Europe. Alberta subsurface strata contain significant forms representing widely distributed species of *Apatognathus*, *Ancyrodella*, *Ancyrognathus*, *Enantiognathus*, *Falcodus*, *Hibbardella*, *Icriodus*, *Nothognathella*, *Palmatodella*, *Palmatolepis*, *Pelekysgnathus* and *Polygnathus*. These species, among other characteristically Devonian conodonts, are present in sufficient quantities to demonstrate a typically Late Devonian faunal sequence.

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UNCONFORMITIES IN PHANEROZOIC SUCCESSION OF NORTHERN JASPER NATIONAL PARK, ALBERTA

Several unconformities occur in the Paleozoic and Mesozoic shelf sequences of the Alberta Rocky Mountains. The stratigraphic succession is repeated several times because of thrust faulting. This repetition, combined with excellent exposures, permits a study of the lateral variations in the stratigraphic units and of the contacts of these units. Most of the stratigraphic breaks are disconformities in local outcrops, but regionally some are important angular unconformities.

The stratigraphic, sedimentologic, and paleontologic evidence is reviewed for the following unconformities: (1) Precambrian-Cambrian and Lipalian interval, (2) Cambrian-Ordovician, (3) sub-Devonian, (4) Late Devonian Frasnian-Famennian, (5) Devonian-Mississippian, (6) Carboniferous-Triassic, and (7) Triassic-Jurassic boundary and gaps in the Jurassic sequence.

The important criteria for recognition of these breaks in the stratigraphic succession are, in order of importance: (1) regional stratigraphy, (2) paleontology, and (3) sedimentary phenomena. Of the sedimentary phenomena, eroded surfaces or truncations and residual concentrations of quartz and chert are very useful. Fossils also are useful for locating stratigraphic breaks. Other features, including phosphates and abrupt changes of lithology, also are associated with some unconformities. In several cases it is impossible without paleontologic evidence to determine the position of a particular stratigraphic break even with complete exposure and closely spaced stratigraphic sections.

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